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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/761,324   | 01/22/2004  | Yusuke Kihara        | 056207.53170US      | 2661             |
| 23911  | 7590        | 09/15/2006           | EXAMINER            |                  |
| CROWELL & MORING LLP<br>INTELLECTUAL PROPERTY GROUP<br>P.O. BOX 14300<br>WASHINGTON, DC 20044-4300 |             |                      |                     | GANAY, STEVEN J  |
| ART UNIT   |             | PAPER NUMBER         |                     |                  |
|  |             | 3752                 |                     |                  |

DATE MAILED: 09/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/761,324             | KIHARA ET AL.       |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Steven J. Ganey        | 3752                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 22 January 2004.  
 2a) This action is **FINAL**.                  2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-10 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) 1-6, 9 and 10 is/are allowed.  
 6) Claim(s) 7 and 8 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1.) Certified copies of the priority documents have been received.  
 2.) Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3.) Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1)  Notice of References Cited (PTO-892)  
 2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
     Paper No(s)/Mail Date 1/22/04.
- 4)  Interview Summary (PTO-413)  
     Paper No(s)/Mail Date. \_\_\_\_\_.  
 5)  Notice of Informal Patent Application (PTO-152)  
 6)  Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "13" and "16" have both been used to designate the porous plate in Figure 6. The reference character "16" should be shown designating one of the injection ports. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

2. Claims 7 and 8 are objected to because of the following informalities: In line 7 of both claims, the tile angle "0" should be changed to --θ--, to clearly define the tilt angle theta. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, line 2, “the fuel” lacks antecedent basis. The phrase should be changed to --a fuel spray--. This will correct later antecedent basis problems in claim 1, lines 6 and 9, claim 3, line 2 and claim 9, line 2, for “the fuel spray”.

In claim 1, line 2, “the injection port” lacks antecedent basis and is indefinite since the fuel spray is recited as being injected from the port in two directions and yet it is not clear how the fuel spray can go in two directions from only one port. Language such as --a plurality of ports-- should be used since that is what is disclosed and shown in the drawings. In lines 4, 5 and 6, the word “port” should be changed to --ports-- to maintain proper antecedent basis.

In claim 1, line 3, “the flow rate distribution” lacks antecedent basis and should be changed to --a flow rate distribution--.

In claim 1, line 7, the phrase “the fuel sprays” lacks antecedent basis and should be changed to --the fuel spray-- to be consistent.

In claim 2, line 2, the word “port” should be changed to --ports-- to maintain proper antecedent basis.

In claim 4, line 2, “the fuel” lacks antecedent basis. The phrase should be changed to --a fuel spray--. This will correct later antecedent basis problems in claim 1, lines 3, 6 and 8, claim 6, line 2 and claim 10, line 2, for “the fuel spray”.

In claim 4, line 2, “the injection port” lacks antecedent basis and is indefinite since the fuel spray is recited as being injected from the port in two directions and yet it is not clear how

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the fuel spray can go in two directions from only one port. Language such as --a plurality of ports-- should be used since that is what is disclosed and shown in the drawings. In line 4, the word “port” should be changed to --ports-- to maintain proper antecedent basis.

In claim 4, line 3, “the flow rate distribution” lacks antecedent basis and should be changed to --a flow rate distribution--.

In claim 5, line 2, the word “port” should be changed to --ports-- to maintain proper antecedent basis.

In claim 7, line 2, “the fuel” lacks antecedent basis. The phrase should be changed to --a fuel spray--. This will correct later antecedent basis problems in claim 7, line 5 for “the fuel spray”.

In claim 7, line 2, “the injection port” lacks antecedent basis and is indefinite since the fuel spray is recited as being injected from the port in two directions and yet it is not clear how the fuel spray can go in two directions from only one port. Language such as --a plurality of ports-- should be used since that is what is disclosed and shown in the drawings. In line 3, the phrase “port is” should be changed to --ports are-- and in lines 7 and 8, the word “port” should be changed to --ports-- to maintain proper antecedent basis.

In claim 8, line 2, “the fuel” lacks antecedent basis. The phrase should be changed to --a fuel spray--. This will correct later antecedent basis problems in claim 8, line 5 for “the fuel spray”.

In claim 8, line 2, “the injection port” lacks antecedent basis and is indefinite since the fuel spray is recited as being injected from the port in two directions and yet it is not clear how the fuel spray can go in two directions from only one port. Language such as --a plurality of

ports-- should be used since that is what is disclosed and shown in the drawings. In line 3, the phrase “port is” should be changed to --ports are-- and in lines 7 and 8, the word “port” should be changed to --ports-- to maintain proper antecedent basis.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 7 and 8 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Arndt et al ‘693.

Arndt et al ‘693 discloses all the featured elements of the instant invention, note specifically Figures 3A-3D and 4A-4D.

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 7 and 8 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Sugimoto et al ‘780.

Sugimoto et al ‘780 discloses all the featured elements of the instant invention, note specifically Figures 4 and 5.

9. Claim 8 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Sugimoto et al ‘476.

Sugimoto et al ‘476 discloses all the featured elements of the instant invention, note specifically Figures 1 and 2.

***Allowable Subject Matter***

10. Claims 1-6, 9 and 10 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Naitoh et al, Munezane et al, Iwano et al, Hurley et al, Harata et al and Tani et al show various fuel injectors with a plurality of injection ports.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven J. Ganey whose telephone number is 571-272-4899. The examiner can normally be reached on 7:00-5:00; M, Tu, W and Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Scherbel can be reached on 571-272-4919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

sjg  
9/12/06



STEVEN J. GANEY  
PRIMARY EXAMINER

9/12/06